DOCUMENT RESUME

ED 298 817 HE 021 690

AUTHOR Pedras, Melvin J.
TITLE Utilizing a Multi-Variate Approach in the Reorganization of a University Academic Department Based upon a Dynamic Macro Model of Change in Education.
PUB DATE Jun 88
NOTE 22p.; Paper presented at the International Conference on Successful College and University Administration (1st, Newcastle upon Tyne, England, June 27-July 1, 1988).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Descriptive (141)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Administrative Organization; Adoption (Ideas); *Change Strategies; *Departments; Educational Innovation; Higher Education; *Models; *Multivariate Analysis; Organizational Change; Planning; *School Organization; State Universities
IDENTIFIERS University of Idaho

ABSTRACT

The model used in a multivariate fashion to reorganize the Department of Industrial Technology Education at the University of Idaho thereby undergoing a test for effectiveness is presented. This model is a product of a seminar held in West Germany in 1986 in which a group of professional educators from several countries produced a generic model for use in the redirection of any aspect of professional education. Development of the model is explained, certain underlying assumptions are noted, and definitions of the model components are given. This gyro model allows for infinite entry points from any location within the system. If a mission change occurs, the gyro is placed in motion, or if constraints are imposed, again the motion begins. Regardless of where the model is entered, it can be used as a guide for change. The gyro model can heat up or increase interchange among its elements dramatically as the degree of agitation transmitted through the decision set increases. The source of educational innovation may occur within any element. The conceptualization, development, and testing of the model at the University of Idaho made an opportunity to place the change process in a formal structure and utilize it for a specific purpose in education. It offered guidance in the restructuring of an academic department at the university level of education. Two appendices provide a list of participants in the development of the model and the proposal by the University of Idaho to use this model. Contains 5 references. (SM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED298817

UTILIZING A MULTI-VARIATE APPROACH IN THE REORGANIZATION OF A UNIVERSITY ACADEMIC DEPARTMENT BASED UPON A DYNAMIC MACRO MODEL OF CHANGE IN EDUCATION

Paper Presented at the
First International Conference on Successful
College and University Administration
June 27-July 1, 1988

Newcastle Polytechnic University
Newcastle upon Tyne, England

by

Melvin J. Pedras, Ed.D.
Chairman
Department of Industrial Technology Education
University of Idaho
Moscow, Idaho
USA

HE 021 690

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

MELVIN J. PEDRAS

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

BEST COPY AVAILABLE

UTILIZING A MULTI-VARIATE APPROACH IN THE REORGANIZATION OF A UNIVERSITY ACADEMIC DEPARTMENT BASED UPON A DYNAMIC MACRO MODEL OF CHANGE IN EDUCATION

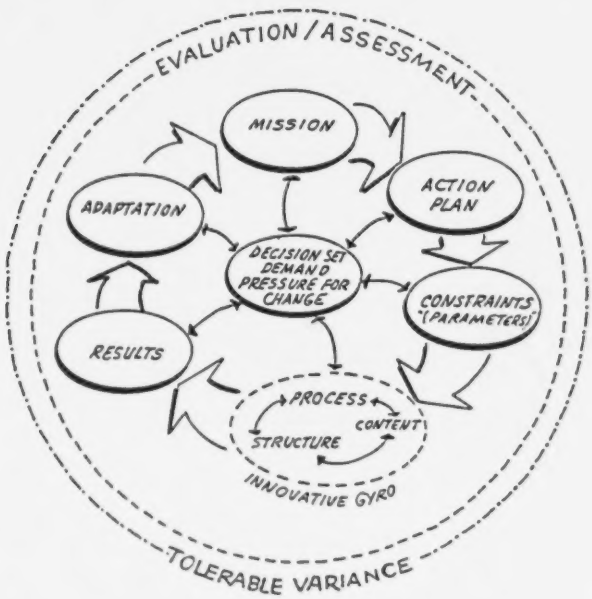
In June 1986 at the Fifth International Seminar on Staff, Program and Organizational Development held in Witzenhausen, West Germany a group of professional educators (See Appendix A) representing several countries met to discuss, among other things, the issue of successful innovations in program and/or course design. After much discussion and scholarly effort the collective thinking of the group produced a generic model which could be used in the redirection of any aspect of professional education. (1986)

The model was used in a multi-variate fashion to reorganize the Department of Industrial Technology Education at the University of Idaho thereby undergoing a test for effectiveness. A discussion of the process follows and will be divided into two parts: model development and model utilization.

MODEL DEVELOPMENT

The model is illustrated in Figure 1 and is titled: A dynamic Macro Model for Innovation in Education - The Witzenhausen Approach.

FIGURE 1



In the development of the model certain assumptions were made and are defined as follows:

a. Education is a dynamic process.

b. Disequilibrium occurs in the education macro-system due to any or all of the following:

- Sub-group demands (ie. faculty, administration, students, auxiliary services, governing boards, accreditation councils, etc.);

- An alteration in the size, scope or content of any sub-system (ie. departments, divisions, colleges within a university, etc.);

- Pressures generated by animate or inanimate objects or trends (ie. technology, market conditions, etc.);

- Change in system resources (ie. finances); and,

- Change in enrollment.

c. Pressure for change may cause turbulence.

d. The level of change/turbulence determines interaction among model elements.

e. The model describes the education system as seeking equilibrium for continued existence.

f. The model describes innovative responses to disequilibrium.

The following definitions of the model components are taken from the work of the full committee as reported by the committee chair (Sokol et al, 1986).

a. DECISION SET - The locus or "hub" of the model. It is at this position that a "conscious" decision is made to set a change (adaptive process) into motion or to "absorb" the pressures (agitation from other components and resist change at that time).

b. MISSION - A macro statement of program intention (goals) usually broad in scope and abstract. No stated time limitations.

c. ACTION PLAN - Specific procedures to change mission statement. The action plan may "stand" alone with no explicit statement of mission.

d. CONSTRAINTS (Parameters) - Socio/cultural/political economic/environmental factors at both the macro and micro level. Constraints may include such issues as a drop or increase in enrollment; a room that is too small in size for a planned class activity; or, a gift of computer hardware.

e. RESULTS - The end product of activities. Function as feedback within the framework of tolerable

variance.

f. ADAPTATION - A formalized direction to the change process.

g. INNOVATIVE GYRO - The dynamic interaction among process, content and structure of the educational innovative process.

The nature of the gyro model is such that it allows for infinite entry points from any location within the system. That is, if a mission change occurs the gyro is placed into motion, or if constraints are imposed, again the motion begins. Regardless of where the model is entered, it can be used as a guide for change.

Another important feature of the model is that the gyro can "heat up" or increase interchange among its elements dramatically as the degree of agitation transmitted through the Decision Set increases. An example might be that a governing board decides to approve a new mission statement which impacts on the offering of a graduate program. This program may in turn need additional funding, or be adapted to fit the specific wishes of the board. The result could be a loss of accreditation standing unless a new action plan is implemented.

The developmental process of the model design showed clearly that what has traditionally been considered a well defined process of identifying innovation and change in education is not rigid and fixed. Rather, the source of educational innovation may occur with any element.

MODEL UTILIZATION

The model describe in Figure 1 was used in the refocus of the Department of Industrial Technology Education at the University of Idaho. This utilization provided a test for the theoretical construct of the model and enabled the Department to benefit from previous educational research.

The Department was formed in late 1950 when the focus of industrial education was to prepare students for service in the public school system of Idaho teaching traditional industrial arts subject matter. Since that time the emphasis is still on the preparation of public school teachers but now stresses the teaching of technology, i.e.; "a comprehensive, action-based educational program concerned with technical means, their evolution, utilization, and significance; with industry, its organization, personnel systems, techniques, resources and products; and their sociocultural impact" (AIAA, p.25). Professional study in

the department also includes the preparation of industrial technologists or those students wishing to pursue careers in industry as managers and supervisors.

The Department offers coursework leading to several undergraduate and graduate degrees. Among these are the: Bachelor of Science in Industrial Technology Education, Bachelor of Technology in Industrial Technology, Master of Science in Industrial Technology Education, Master of Education in Industrial Technology Education, Doctor of Philosophy and Doctor of Education in Vocational Education with a concentration in Industrial Technology Education.

In the fall of 1985 discussions were held with Department faculty and the Dean of the College of Education to review the status of the Department. Subsequent discussions, a major review of Department programs by an advisory committee (1987), and a major follow-up study conducted by Pedras and Heidari (1987) led to a decision to reevaluate all study programs and to develop a clear mission statement followed by major goals and objectives that would be used as a guide in restructuring the Department. This mission statement, goals and objectives are included in Appendix B and provided the framework for the reorganization of the Department.

The change model was entered from the center and progressed first to the adaptation area where a formalized direction for change was established by faculty and administrators. From adaptation the mission area followed which culminated in the development and final acceptance of a workable mission statement, goals and objectives. The model was further followed and lead to the develop of an action plan which included a restructuring of the teacher education program, reorganization of the physical plant and reassignment of professional duties. This action plan was placed on a time line of approximately two years and is currently in the second year.

As changes began to be implemented several constraints were encountered which slowed the overall process. As the model suggest, constraints may include socio, cultural, political, economic or environmental factors both at the macro and micro level. The constraints faced in this instance included some reluctance by higher-level administrators to move from a well understood traditional program to a modern, technology-based program, a rather involved bureaucratic organization from which permission for various changes had to be secured and severe financial limitations. Further adding to constraints encountered,

were an excessive amount of coursework taught by the three member staff, a somewhat outdated facility, antiquated equipment and dropping student enrollment.

In an effort to deal with the above constraints and remaining within the tolerable variance of the model; the following actions have been taken. First, a concerted in-house public relations effort was undertaken to help administrators understand the new direction of technology education. This involved the cooperation of faculty, teachers in the field, advisory committee members and state education officials. Several general discussion meetings were held to explain the focus of technology education and its place in public education. Second, a new technology teacher program of study was developed and is structured to eliminate unnecessary duplication of courses. The program now places major emphasis on technology coursework such as telecommunications, desktop publishing, robotics, lasers, automated construction, computer aided drafting and manufacturing, etc. Third, a name change from industrial education to industrial technology education has been recommended to reflect the national trend. Fourth, several efforts have been initiated to secure funding for equipment. A major contribution was approved by our Dean toward the purchase of applied science equipment. Finally, all program

bulletins were updated and prepared for distribution to interested persons and prospective students. In the near future, all high school counselors, principals and technology teachers will be sent a packet of information regarding our programs and interested students groups will be invited on campus to view programs and participate in Department activities. This effort should lead to increased student enrollment.

As constraints are dealt with, the innovative gyro section of the model is entered and interaction among the elements of process, content and structure are attained. It will be noted as this point that the gyro can also be entered and/or agitated from the decision set area as well as from the constraints element. In this particular case, the gyro was entered as a result of internal pressure to effect change and the effort to overcome various barriers to proposed changes.

From the gyro movement is toward the results model element. Results are the end product of the change process and in this case are reflected in several immediate improvements. Graduate enrollment has increased, effort to bring updated workshop coursework into the field has yielded

additional interest in our program and there is a greater understanding about the nature of technology education and its contribution to general education.

As progress continues and future changes are made, an annual evaluation will be conducted and a yearly status report will be submitted to appropriate administrators. This will serve several purposes. First, it will allow Department faculty to conduct program reviews and determine how well goals and objectives are being met. Second, it will communicate to administrators the viability of the total program. Finally, it will provide a good public relations effort because news of successful innovation travels rapidly.

CONCLUSION

The conceptualization, development and testing of the model provided an opportunity to place the change process in a formal structure and utilize it for a specific purpose in education. In this case, the model provided guidance in the restructuring of an academic department at the university level of education. It also dispeled the myth that what might traditionally be considered as a well defined process

identifying innovation and change is not at all well defined. Rather, the source of change may occur with any element and will affect all other elements.

As the Department of Industrial Technology Education at the University of Idaho enters it second year of change within the scope of the above model, it does so with a vision of continual improvement. Change is a dynamic, ongoing process and the Department believes that this change will provide positive growth and innovative opportunities for its students and staff.

BIBLIOGRAPHY

American Industrial Arts Association (1985). Technology education: a perspective on implementation. Reston, VA: AIAA.

Hebron, C., Smith, A. & Riebel, F. (Eds.), (1986). Proceedings of the Fifth International Seminar on Staff Program and Organizational Development, Witzenhausen, Germany (FRG).

Moshier, K. (Ed.). (1987, March). A Comprehensive Review of the Industrial Education and Technology Department at the University of Idaho - Review Committee Report. (Available from Dr. Melvin J. Pedras, University of Idaho, Moscow, Idaho.)

Pedras, M., & Heidari, F. (1987, August). Follow-up study of industrial education graduates at the University of Idaho. Paper presented at the annual conference of the Idaho Vocational Association, Boise, ID.

Sokol et al (1986). A dynamic macro model of change in education. In C. Hebron, A. Smith, & F. Riebel (Eds.), Proceedings of the Fifth International Seminar on Staff Program and Organizational Development, (pp. 22-32). Witzenhausen, Germany (FRG).

APPENDIXES

APPENDIX A

The following members participated in the development of the model upon which this paper is based.

Kenneth Anderson
School of Public Health and Community Medicine
University of Washington
Seattle, Washington USA

Stoffel Helm
Bureau of University Education
University of the Orange Free State
Blowmfontein, South Africa

Raymond Jones
School of Pharmacy
Portsmouth Polytechnic
Portsmouth, England

Julia Monte
Daytona Beach Community College
Daytona Beach, Florida USA

Fersun Paykoc
Faculty of Education
Middle East Technical University
Ankara, Turkey

Melvin J. Pedras
Dept. of Industrial Technology Education
University of Idaho
Moscow, Idaho USA

Dietrich Schaupp
College of Business & Economics
West Virginia University
Morgantown, West Virginia USA

David Sokol
Warren Wilson College
Swannanoa, North Carolina USA

Aaron Vessup
Group Communication Associates
Elgin, Illinois USA

APPENDIX B

DEPARTMENT OF INDUSTRIAL TECHNOLOGY EDUCATION

College of Education

UNIVERSITY OF IDAHO

The Department of Industrial Technology Education is one program area within the Division of Vocational Teacher and Adult Education. It is in the unique position to fulfill three major functions: teaching, service and research especially as they apply to the field of Industrial Technology Education.

The Department functions within the broad scope of preparing teachers for service in the public school of Idaho and the preparation of mid-level industrial managers and supervisors. Currently this dual function is being conducted by three full-time faculty members.

DEPARTMENT MISSION STATEMENT

The mission of the Department of Industrial Technology Education is to provide quality and timely professional education to the students pursuing careers in industrial technology teaching or industrial management and supervision.

DEPARTMENT GOALS AND OBJECTIVES

Dept. Goal #1

PROVIDE A STRONG UNDERGRADUATE AND GRADUATE INDUSTRIAL TECHNOLOGY TEACHER EDUCATION PROGRAM.

Objectives:

1. Organize and utilize a technology education

advisory committee to assist with curriculum development and equipment acquisition.

2. Identify and implement competency-based modern technology curricula which reflects our current

   technological society and includes study in Principles of Technology, Communications, Manufacturing, Construction, Power/Energy/Transportation and Emerging Technology.

3. Integrate the study of computers into all areas of industrial technology education.

4. Provide for a strong math and science background for technology education students.

Dept. Goal #2

PROVIDE LEADERSHIP IN THE IDENTIFICATION, DEVELOPMENT AND IMPLEMENTATION OF EDUCATION PROGRAMS FOR INDUSTRIAL TECHNOLOGY.

Objectives:

1. Perform an extensive needs assessment to identify the need for industrial technology curricula as viewed by industry.

2. Utilize above advisory committee in the development and articulation of curriculum elements germane to the preparation of the industrial technologist.

3. Identify, purchase and install appropriate equipment for the conduct of a quality industrial technology program.

Dept. Goal #3

PROVIDE IN-SERVICE EDUCATIONAL ACTIVITIES FOR PRACTICING INDUSTRIAL TECHNOLOGY TEACHERS AND ENCOURAGE CONTINUAL PROFESSIONAL GROWTH.

Objectives:

1. Utilize recently completed research and identify appropriate in-service workshop topics.

2. Identify and train affiliate faculty to assist with

the conduct of in-service workshops.

3. Schedule workshop activities in appropriate locations throughout the State.

4. Develop an articulated ongoing continuing education program for technology teachers

5. Develop and/or acquire, catalog and distribute appropriate technology education library materials.

Dept. Goal #4

PROVIDE DIRECT FIELD CONTACT WITH PRACTICING INDUSTRIAL TECHNOLOGY TEACHERS TO ENCOURAGE PROFESSIONAL COMMUNICATION.

Objectives:

1. Identify and obtain funding for teaching assistants to allow faculty the opportunity to visit practicing teachers throughout the State.

2. Sponsor periodic conferences on the U of I campus or at cooperating schools on an as needed basis.

3. Schedule and promote evening graduate classes to encourage the professional development of teachers.

4. Develop and publish an industrial technology newsletter.

Dept. Goal #5

DEVELOP A STRONG PUBLIC RELATIONS PROGRAM TO ENHANCE UNDERSTANDING AND SUPPORT FOR INDUSTRIAL TECHNOLOGY IN IDAHO.

Objectives:

1. Redesign all program brochures and PR material in a professional manner.

2. Publicize all programs of study throughout the State.

3. Publicize the graduate program outside of the State.

4. Utilize all available media and contacts to promote programs including:

a. Local newspapers, radio and TV.
b. Local bulletin boards.
c. State Div. of Voc. Ed. newspaper and industrial technology bulletin.
d. High school and community college counselors.
e. Professional meetings, workshops and conferences.
f. National conferences.
g. High school teachers, principals, and superintendents.

Dept. Goal #6

SUPPORT A STRONG INDUSTRIAL TECHNOLOGY AND HONOR STUDENT ORGANIZATION THEREBY ENCOURAGING THE DEVELOPMENT OF STUDENT LEADERSHIP POTENTIAL.

Objectives:

1. Encourage student membership in the U of I chapter of the Industrial Technology Student Organization. (AIASA)

2. Initiate a U of I chapter of the national industrial education honor society Epsilon Pi Tau.

3. Encourage student membership in either organization by assisting with funding, project development, structured presentations, professional involvement and travel.

4. Promote a working relationship among the U of I student organization and student organizations at the high school and community college level.

5. Promote student professional membership in national industrial technology organizations.

Dept. Goal #7

PERFORM AND DISSEMINATE NECESSARY INDUSTRIAL TECHNOLOGY RESEARCH.

Objectives:

1. Identify and prioritize necessary and manageable areas of industrial technology research.

2. Identify and acquire appropriate resources to assist in the conduct of appropriate research activities.

3. Conduct prioritized research according to a predetermined schedule.

4. Present research results at local, state, national and international conferences within the financial constraints of the University.

5. Prepare research data for potential dissemination through publication in professional journals, newsletters or other appropriate forms of communication.

6. Communicate research results with other teaching or technology professionals through in-service activities.